

REMARKS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments, and the following remarks.

The amendments to this patent application are as follows. The drawings have been amended by revising FIGS. 2, 4, 14 and 21, as indicated in red ink on the "Annotated Marked-Up Copy." Specifically, FIG. 2 has been amended in red to change "100" to --100'--; to change "102" to --102'--; to change "104" to --104'--; to change "106" to --106'--; to change "4A" to --4--; to change "4B" to --4-; to change "4C" to --4--; and to change "4D" to --4--.

Specifically FIG. 4 has been amended to change "100" to --100'--; to change "102" to --102'--; and to change "104" to --104'--; and the change "106" to --106'--.

FIG. 14 has been amended to change "76" to --16--.

FIG. 21 has been amended to change "142" to --172--.

The Specification has been amended on Pages 38, 39, 40 and 41 in order to change "100" to --100'--;
to change "102" to --102'--;
to change "104" to --104'--; and
to change "106" to --106'--.

Thus the formal objections by the Patent Examiner to the drawings have now been overcome. This is because the use of the objected to reference numerals "100", "102", "103" and "104" has been changed to be the acceptable reference numerals --100'--; --102'--; --103'--; --104'--. FIGS. 14 and 21 have been corrected. The objected-to use in the drawings of "4A", "4B", "4C" and "4D" has been overcome by changing these to the acceptable reference numeral --4-- in FIG. 2.

The objection by the Patent Examiner to reference numeral "48" as being shown in FIG. 3, but allegedly not being mentioned in the Specification, is respectfully traversed.

In the present Specification, on Page 42 in the bottom paragraph is a statement that " the finger 38 of the arm 16 is contacting the leading edge 48 of the slide 24." In the present Specification, on Page 43 in the bottom paragraph is a statement that refers to "the leading edge 48."

In the present Specification on Page 45, in the paragraph in lines 2 to 8 is a statement that refers to "the leading edge 48".

Thus it is respectfully submitted that reference numeral "48" is sufficiently described in the present Specification; and hence no further description thereof is required.

The objection to the "Summary" portion of the present Specification is respectfully traversed. The Applicant is entitled under 35 U.S.C. 112 to define his invention by describing the subject matter thereof in a full, clear, concise, and exact manner, wherein the inventor can be his own lexicographer. Therefore, it is further pointed out that the length of the "Summary" and the number of details within the "Summary" are justified, in view of the subject matter of the present invention. Specifically there are 21 sheets of

drawings for FIGS. 1 to 30, and there are 47 pages of Specification. All of this clearly justifies having a "Summary" which is of greater length than would be required for a lesser invention than the Applicant's. Withdrawal of this objection to the Specification is respectfully requested.

On Page 4 of the Office Action, the Patent Examiner stated that the following corrections are suggested to claims 6 and 14. In each of claims 6 and 14, on lines 6 and 9 of each claim, --indexer-- should be added after "cassette."

In response to this suggestion, each of claims 6 and 14, on lines 6 and 9 of each claim, has been amended to add --indexer-- after "cassette."

For all the reasons set forth above, it is firmly believed that the drawings, the Specification, and all the claims are now in complete compliance with all of the formal requirements of 35 U.S.C. 112. Withdrawal of this ground of rejection is respectfully requested.

Reconsideration and withdrawal are respectfully requested for the rejection of claims 1-4, 6, 9-12 and 14 under 35 U.S.C. 102(b) as being anticipated by *Schram, et al U.S. Patent No. 4,818,169* (submitted by Applicant).

The present invention is directed to an automated slide loader cassette for a microscope comprising

a slide cassette indexer for containing a plurality of microscope slides;

a slide exchange arm for gripping a microscope slide within said indexer and for transporting said slide to said microscope for observation and for transporting said slide after observation to return said slide back into said indexer; and

an XY-stage for moving said slide exchange arm between said indexer and said microscope;

said indexer, said arm, and said XY-stage are connected together and integrated into one unitary modular instrument that can be moved from one microscope to another.

New claims 17 to 22 have been added. New claim 17 depends from independent claim 1, and further recites a plurality of microscope slides. New claim 18 depends from

independent claim 9, and further recites a plurality of microscope slides.

New claim 19 depends from independent claim 1, and recites further structure from the slide cassette. New claim 20 depends from independent claim 9, and recites further structure from the slide cassette. Support for newly added claims 19 and 20 is found on Page 20 in lines 1 to 17 of the present Specification.

Newly added independent claim 21 is based upon and is supported by original claim 1. Newly added claim 22 depends from claim 21 and recites the combination with a microscope.

The *Schram* Patent in column 4 in lines 40 to 68 discloses a wafer positioning system 10 which is depicted in perspective, broken away and partially exploded form in FIGS. 1, 2 and 4, employed with 6" semiconductor wafers that are to be taken from a supply in any desired order, inspected visually or automatically, and then accepted for further processing or rejected. A stable base for the system is provided by a horizontal reference area 12 mounted on legs 13, and overlying certain portions of the mechanism, as

described below. The area and shape of the reference surface 12 are determined by the extent of motion to be imparted in mutually orthogonal directions by a stage mechanism which is mounted upon it. The reference surface 12, however, is suitably massive to support the remainder of the structure in stable and vibration free fashion, and has a precision finished surface to insure that XY stage mechanisms can be moved to different positions without material height deviations. First and second side supports 14 and 16 are mounted along opposite parallel edges of the reference surface 12. These are shown generically as rectangular panels, although they may take other forms, such as corner posts or a framework construction. Whatever configuration is employed, it is desirable to have a suitably massive and vibration free support for a top bridge member 18 that provides a direct mount for a precision microscope 20. The microscope 20 is mounted along an inspection axis 21 perpendicular to the horizontal reference surface 12.

Thus *Schram* fails to teach or to suggest the present invention, because *Schram* does not disclose a plurality of microscope slides, which are claimed. Also, *Schram* does not disclose the claimed structure that the indexer, the arm, and

the XY-stage are connected together and integrated into one unitary modular instrument that can be moved from one microscope to another. *Schram* teaches that his apparatus is "suitably massive"; and hence it could not be moved from one microscope to another.

Schram is also nonanalogous prior art because it relates to semiconductor wafers, and not to microscope slides, as claimed. Hence a person skilled in the art of microscope slides would never search within or consider any references from, the semiconductor wafer art; in order to solve a problem relating to microscope slide transporting.

Generally, the *Schram* reference relates only to semiconductor wafers. More particularly, the handling technology of *Schram* and specifically the gripping, fixturing and transfer means are different. *Schram* additionally fails to teach the transportability features of the claimed structure.

With respect to claim 1, this claim is directed to the automated slide loader cassette for a microscope which is "one unitary instrument that can be moved from one microscope to another." The *Schram* reference fails to teach or to suggest this claimed invention.

With respect to claim 2, the claimed indexer mechanism facilitates the claimed inventive concept of a transportable instrument. The nature of the programmable indexer provides for achieving the transfer height for different microscope applications. By using a high resolution encoding system on the indexer, the system can be adapted to almost any microscope. The *Schram* reference discloses the use of fixed index positions on the indexer to match the fixed height of the vacuum probe.

With respect to claim 3, the common base plate is available to unify the instrument. Its functions to anchor the microscope to a position so that it is oriented for proper slide transfer. This makes it a useful component with respect to the transportability feature of the invention.

With respect to claim 4, the stage mounting structure is not taught by the *Schram* reference. The Stage uses an exchangeable mounting ring (28) as shown in FIG. 8 of the invention. By using the appropriate mounting ring the stage can be mounted to almost any commonly available microscope.

The Examiner is making the comparison between the *Schram* component 59 the claimed adapter ring (section 8 of Office Action). This seems to be in error. Component 59 of *Schram* serves to mount the arm assembly to the system frame. The function of the component is not for universal microscope adaptation and is quite different.

With respect to claim 6, this claim refers to the distal finger mounting and function. The claimed invention is designed so that the transfer arm (and distal finger) are mounted to the stage. This is in contrast to the vacuum probe design in the *Schram* reference. The *Schram* device is fixed to the frame and is independent of the XY stage and moves in a XY Cartesian fashion. Conversely to this, the claimed structure fixes the arm to the XY-stage and moves along the linear axis with additional travel in the Z-axis provided by pivoting the assembly on the linear axis as

described in the Specification.

With respect to claim 9, the claimed structure is not microscope specific and can be moved from one microscope to another. This is in contrast to the *Schram* structure that integrates the optical components into the system with a strong teaching of stability and resolution. The reference surface (12) of *Schram* serves as the common tie point for all the components and is integrated with the optical system. The vacuum probe mechanism is attached to this plate and has Cartesian travel and the four axis wafer stage is fixed to it as well.

With respect to claim 10, the slide indexer is an integral part of the invention. The indexer with a high resolution programmability provides functionality to enable the invention to be adapted to any microscope. Rather than the prior art fixed index positions, the slide unload position can be indexed according to the invention, to the proper position by microprocessor control depending on the height of the microscope.

With respect to claim 11, the slide indexer is an integral part of the instrument of the invention. The indexer with a high resolution programmability provides functionality to enable the instrument to be adapted to any microscope. Rather than prior art fixed index positions, the slide unload position can be indexed according to the invention, to the proper position by microprocessor control depending on the height of the microscope.

With respect to claim 12, the universal mounting ring feature of the invention is a unique element to the adaptability of the invention. The ring geometry is such that it avoids interference with the optics of the microscope and does not impinge on the function of the microscope. This system also allows for trans-illumination of the specimens where the *Schram* invention does not have that capability. Trans-illumination is essential for the imaging of specimens mounted onto glass slides.

With respect to claim 14, the mounting of the slide directly to the XY-stage is another differentiating feature. By mounting the distal arm to the XY-stage, the arm is given 4 axes of travel: the X axis and Y axis aligned to the cassette, plus the linear axis which facilitates the slide transfer and the pivot axis which enables the distal finger to move clear of the slide and of the optics for unimpeded analysis. No vacuum is used for the claimed structure whereas a vacuum is critical for the prior art device.

It is to be emphasized that there are very basic differences between the prior art structure and the present invention. Generally, the goals and objectives of the two instruments are quite different. The *Schram* device seeks to provide a more stable optical system for semiconductor wafer inspection and measurement. The claimed invention provides a simple, efficient means to add an automated microscope slide transfer mechanism to existing microscope systems.

The slide gripper mechanism that is mounted to the stage for the claimed invention is also a differentiating feature. The *Schram* structure does not teach such a device and does not suggest such a component.

Another item that is not disclosed in the prior art is the slide transfer guide. The slide guide channel is integrated with the top plate of the XY-stage parallel to the linear travel of the distal finger. This feature is another component of the claimed slide transfer mechanism which differentiates from the *Schram* device.

For all the reasons set forth above, this one prior art reference fails to provide an identical disclosure of the claimed invention. Hence the present invention is not anticipated under 35 U.S.C. 102.

Because there are now a total of 22 claims pending in this patent application, enclosed is a check in the amount of \$18.00 to pay for adding two (2) extra claims for a Small Entity. The Commissioner of Patent and Trademarks is hereby authorized to charge any additional fees, or to credit any overpayment, to our Deposit Account: 03-2468.

Because of all the above, the present invention is believed to be patentable under 35 U.S.C. 103. A prompt notification thereof is respectfully requested.

Respectfully submitted,

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Enclosures:

- 1) Copy Petition Three Month Extension of Time
Small Entity
- 2) Copies of Annotated Marked-Up FIGS. 2, 4, 14
and 21.
- 3) Check for \$18.00 for 2 extra claims.

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on DECEMBER 12, 2003.



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